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R E P O R T
OF THE
D I R E C T O R S
OF THE
WESTERN AND NORTHERN
INLAND LOCK NAVIGATION COMPANIES,

IN THE
STATE OF NEW-YORK, *State of New York*
TO THE *K of Northern Inland*
LEGISLATURE: *Lock Navigation*
Companies
TOGETHER WITH THE

R E P O R T
OF
MR. WILLIAM WESTON,
ENGINEER.

NEW-YORK:

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—1796.—



REPORT
OF THE
COMMISSIONERS OF THE
MUSEUM OF NATURAL HISTORY
FOR THE YEAR 1871

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To the Honorable the Legislature of the State of New-York in Senate and Assembly convened.

The Directors of the Western and Northern Inland Lock Navigation Companies,

RESPECTFULLY REPORT,

THAT in the summer and fall, ensuing the incorporation of the subscribers to the said companies, surveys were made on the Western route, from Schenectady to Wood Creek, and on the Northern route, from the head of the tide water of Hudson's river, to Fort Edward; thence to the Northern Wood Creek, and down the same, to its junction with Lake Champlain.

The object of these surveys, was to ascertain, what improvement the internal navigation on each route was susceptible of, and which in particular, were the greatest obstructions to the water transportation, of the agricultural produce of the interior of the state. The result was perfectly favorable, and followed by a determination on the part of the Western Company, to begin its operations at the Falls in the Mohawk river, in Herkemer county, which created a portage, where all boats navigating the Mohawk river, with their cargoes, were transported nearly one mile over land, an operation attended with unavoidable delay, and great expence, as well as with injury to the boats and their cargoes. The work was accordingly commenced in April 1793, with nearly three hundred labourers, besides a competent number of artificers, but its progress was arrested early in September, for want of funds, many of the stockholders having neglected to pay the requisition made by the Directors either because they had not the means to supply such advances, or from an apprehension of the impracticability of succeeding in the operation.—
In January 1794, the work was however recommenced, although feebly, and some progress made, in hopes that the Legislature would afford aid, by grants, or loans.

money, or by taking the unsubscribed shares. Accordingly, the Legislature, sensible of the propriety of relieving the stockholders, in one or either of these modes, and appreciating, with that discernment which has invariably characterised the Legislature of this state, the advantages the community at large would derive, from the success of the important undertaking, which they had encouraged individuals to attempt, directed a subscription on the part of the people of the state, of two hundred shares to each company; this measure was attended with the most salutary effects. The hopes and confidence of the companies were revived, and the works recommenced in May last, with a correspondent degree of alacrity; but the very high price of agricultural produce, creating a most extensive demand for labour, it was found impossible to obtain such a number of workmen, as were requisite to the finishing of the work, before the end of the summer.—Hence it was the 17th of November, before the Canal and Locks were so far completed, as to afford a passage to boats. An account is herewith delivered, of the number of boats which passed to the 18th of December, when the frost rendered the navigation in the river no longer practicable: what remains still to be done at that place, is trifling, and a full completion of all the work, will be effected by a small number of hands, employed for a few weeks, in the ensuing spring.

As a description of the country through which the Canal is carried, a detail of its formation, and delineation of the beneficial effects, which already are, and will hereafter be experienced from it, may not be uninteresting to the community, and in particular to the Legislature, whose deliberations have the interest of its constituents so constantly in view, we beg leave to exhibit the following SUMMARY:

The Canal is drawn through the Northern shore of the Mohawk river, about fifty-six miles beyond Schenectady. Its track is nearly parallel to the direction of the waters of the fall, and at a mean about forty yards therefrom. Its supply of water is from the river, and the Canal commences above the falls, in a neat, well covered basin of considerable depth of water, and re-enters the river in a spacious bay at the foot of the falls; its length is 4752 feet, in which distance the aggregate fall is 44 feet 7 inches. Five locks having each nearly 9 feet lift, are placed towards the lower end of the Canal, and the pits, in which they are placed, have been excavated out of solid rock, of the hardest kind; the chamber of each lock is an area of 74 feet by 12 feet in the cleare, and boats drawing three feet and an half of water may enter at all times; the depth of water in all the extent of the Canal beyond the locks is various, but not less than 3 feet in any place; near the upper end of the Canal

a guard lock is placed without lift, to prevent a redundancy of water ; when the water in the river rises beyond the lowest state, sluices are constructed to discharge the surplus water entering the Canal, from the two small rivulets which intersect it's course ; about 2550 feet of the Canal is cut through solid rock, and where the level struck above the natural surface of the earth, or rather rock, strong and well constructed walls are erected, supported by heavy embankments of earth, to confine the water and to keep the level, hence there is no other current in the Canal than an almost imperceptible one, when the summit lock is drawn ; three handsome and substantial bridges are thrown over the Canal, at so many roads which have been intersected by the Canal.

The following state of facts, will evince the beneficial influence this important work has had, on the transportation of the produce of the country beyond the falls, and on that of the necessary supplies for the consumption of our useful hardy husbandmen in that quarter, employed in reducing a wilderness to smiling and fertile fields, promoting their own happiness, and the commerce and respectability of the state.

The falls, previous to the improvements above stated, being impassable, even for empty water craft, these with all their cargoes, were transported by land, over a road as rough, rocky and bad as the imagination can conceive, of necessity therefore, the boats were of such construction as might be transported on a wheel carriage, consequently of little burthen, seldom exceeding a ton and a half ; each boat, was navigated by three men, and a voyage from fort Schuyler to Schenectady, a distance of 112 miles, and back to the former place, was made at a mean in nine days. Thus the transportation of a ton of produce, if no back freight offered, was equivalent to one man's wages for eighteen days ; the Canal and locks can pass boats of 32 tons burthen and upwards, but impediments in the river, still to be removed, between Schenectady and the falls, and between the latter place and fort Schuyler, prevent the use of boats of more burthen than ten or eleven tons, each of these are navigated by five men, and make the same voyage in fourteen days, which if no back freight offers, is at the rate of seven days wages of one man for one ton ; but until improvements shall be made in the river below, and above the falls, these boats when the water in the river is in the lowest state, which is usually from the middle of July to the close of September, can only convey about five or six tons in that period, then the transportation of a ton between the places aforesaid, is equal to the wages of one man for fourteen days, affording still an important saving. The whole time taken to pass the Canal and locks does

not exceed three quarters of an hour ; the same burthen transported as heretofore by land, caused a detention at the very least, of an entire day and often more ; but the advantages above detailed will not be confined to the inhabitants residing in the country on both sides of the Mohawk, between the falls and fort Schuyler, but extended to those in the more western part of the state ; when a Canal of little more than a mile and an half in length, through grounds unincumbered with rocks and chiefly cultivated, shall connect the waters of the Mohawk river with those of Wood Creek, and when that creek shall be improved, and some trifling obstructions removed in some few places, in the Onondaga and Seneca rivers, for then boats of ten tons burthen and more, may with facility be navigated to the most remote end of the Cayuga lake. The expence of these improvements, and those requisite between Schenectady and the falls, has been estimated by that able engineer, Mr. William Weston, who has conducted the companies works in the last year, and who has made a critical examination of the whole line, which was the object of the act of incorporation, a report of his, with the estimates alluded to, and others to improve the navigation between Schenectady and the sloop navigation of Hudson's river, are herewith delivered, the aggregate of which, although amounting to a sum, probably beyond the ability of the company, until the most distant period in which by law the works are to be completed, is not only small, but perfectly trifling, when put in competition with the incalculable advantages, to every part of the community, which must inevitably result from the completion of the work in all the extent of the state.

The directors have already determined to form the Canal, between the Mohawk river and Wood Creek, at Fort Schuyler, and a proper person is sent to that place to receive proposals for furnishing the requisite materials, and proposals have actually been offered for doing the excavating part of the work by contract, on which the directors will decide with all convenient speed, that the operation may commence early next spring ; and they hope its completion in the month of November next, unless accidents, not at present foreseen, should intervene to retard its progress.

It is seriously to be lamented, that many of the stockholders, are not in conditions to make advances in the present year, sufficiently extensive, both for the Canal at Fort Schuyler, and also to improve Wood Creek, or the rapids between Schenectady and Schoharie Creek. The directors will, however, think it incumbent on them, to borrow money for those purposes.—If it can be obtained by mortgaging the works already completed. The loan of a sum, equal to half of what the Canal and locks at the falls have cost, would be

amply sufficient for two of those objects, with such addition as it may be in the power of the stockholders to contribute.—The account herewith delivered marked A, will shew what that cost amount to, and another marked B, what boats have passed; but as they cannot stipulate reimbursements, sooner than at the expiration of five years, it is little probable that a loan can be made from individuals. Their only prospect of aid must therefore be a respectful reliance on the Legislature, which will undoubtedly appreciate the importance of speedily removing the obstructions alluded to, either by a loan, or by an anticipation of the payments, on the shares in the stock held by the state. And as the estimate, for the removal of all the impediments to the navigation between Schenectady, and the carrying place at fort Schuyler, the Canal and locks at that place, the locks and other improvements in wood creek, and the obstructions in the Onondaga and Seneca rivers, as far as the southern extreme of the Cayuga lake, a distance of more than 260 miles, adding ten per cent. on the aggregate for contingencies, amounts to £. 73,540, the proportion of this sum on the two hundred shares belonging to the state, will be only £. 14,708.

The Legislature will permit us respectfully to observe, that should assistance be afforded in either shape, the prospect of a speedy reduction of the price of transportation, would doubtless greatly enhance the value of the property of the people of this state, bordering on the western waters, and recently purchased from the natives, and still unfold.

In the summer of 1793, the directors caused wood creek to be cleared of the timber which had fallen into it, in such quantity as almost altogether obstructed the navigation; and as the serpentine course of the creek greatly increased the distance, from its source to its mouth, beyond that of a straight line, thirteen Isthmus's were cut, which made a reduction in the distance of more than seven miles. Its banks are, however, so thickly covered with trees of the largest size, and so many of those, either from decay, or by the force of winds, are annually thrown into the creek, that it will be indispensably necessary to clear the banks of the timber, for the distance of four rods at least, and contracts are proposed to be made for that purpose. The lands on the south side of the creek, from opposite Canada creek to the Oneida lake, appertain to the state; and we humbly suggest the propriety of vesting the lands, to the extent of the distance above mentioned, in the western company. Should this favor be conferred on the company, and extended to enable them to obtain the same quantity of land on the northern shore, by an

exchange with the present proprietors, for an equal quantity, part of the small reservations on the Oneida lakes, purchased from the Oneidas; it is believed the proprietors would be willing to make the exchange.

In the year 1793, the northern company commenced a Canal in the vicinity of Still Water, intending to extend it to Waterford. This business, after considerable progress had been made, was also arrested, and for the reasons which prevented the prosecutions of the works at the falls. A contract was made in that year, for constructing a Canal and locks, to open the navigation of the northern wood creek, with Lake Champlain, obstructed by the falls at Skeenborough. The excavation of the Canal through solid rock is nearly completed, and the locks will be constructed and finished in the present year, if contracts for furnishing the necessary numbers of bricks can be made, and which is now attempted to be done.

In 1794, the northern wood creek was partially cleared of the timber which had fallen into it, and boats are now capable of passing from the falls of Skeenborough, to near fort Ann; and as the road between these two places is exceedingly bad and deep, very considerable advantage has resulted from the operation.

Mr. Weston has examined the direction of the Canal commenced in 1793, near Still Water, and the intermediate grounds to Waterford—the river from Still Water to Fort Edward—the country thence to wood creek, and that creek to its junction with Lake Champlain, and has given it as his opinion, that in all this line, as in the western, the country is more favorable for works such as are contemplated, than any he knows, or has ever been advised of—that the expence will be trifling, compared with any other of equal extent in any neighbouring state which he has visited; but for want of time he was not able to take surveys, on which correctly to form estimates of each particular improvements.

Many of the settlers adjoining the waters on both routes, through which the improvements are intended, and by which the internal navigation, in its present imperfect state, is carried on, have very improvidently fallen the timber from the banks into those waters, to such an extent, as in many places renders it difficult to obtain a passage. This evil cannot be effectually remedied without further Legislative provision in the premises; and the directors of both companies respectfully intreat the Legislature to afford it.

The valuation of the grounds (through which it has been, and shall hereafter be necessary to draw Canals) in the manner directed by the act of incorporation, has caused serious embarrassment, as well to individuals, whose pro-

erty is injured by the works, as to the company.—An alteration in this respect is humbly entreated, and the directors beg leave respectfully to suggest, the propriety of enabling the Supreme and Circuit Courts to appoint appraisers, whose decision shall be conclusive, under the sanction of an oath, impartially to estimate the damages, or such other mode as the wisdom of the Legislature shall devise.

The several accounts herewith exhibited will shew the monies which have been received by the directors, and how the same has been expended.

The arrestation of the work in 1793—the extravagant encreases in the price of labour and materials—the want of experience in persons of every description, employed in works perfectly novel in this country, with the exception of the engineer in the last year, has greatly enhanced the expence, but which we trust will in future be avoided, as experience has enabled the directors to systemise their operations, and to introduce as much economy in the several requisite arrangements, as a business of this nature is susceptible of—and the directors have reason to believe, from the detailed manner in which the engineer has formed his estimates, that the future expence will be confined to the aggregate amount of those estimates. The directors will not, however, be deterred from prosecuting the works, committed to the companies respectively, with as much celerity as their funds will permit, persuaded, that great and important advantages will result to the community, however small the retribution may be to the subscribers, at least for some years to come.

All which is most respectfully submitted;

By Order of the Directors of both Companies, *Ph. Schuyler, President.*

Ph. Schuyler, President.

N O T E.

From the 17th of November, 1795, to the 18th of December following, eight large boats, and one hundred and two small boats, passed the little falls on the Mohawk, and paid a toll in the aggregate of £. 80. 10. exclusive of that on nine boats which passed gratis, on the day when the locks were opened. The season being so far advanced, only a small proportion of boats were navigated on the river in this month, compared with that usually employed in the navigating season.

R E P O R T

Of Mr. WESTON, to the Directors of the Western
and Northern Inland Lock Navigation Companies.

GENTLEMEN,

AGREEABLE to your instructions of the 16th May, requesting me to examine such works as had been already executed, and such as remained to be done by the two companies, incorporated for the improvement of Inland Navigation in the state of New-York, and to form such plans and estimates as might enable the directors, to form an idea of the sums that would be requisite to carry the contemplated works into effect, I proceeded to an examination of the state of the works at the Little Falls, which being a primary object with the directors, caused me to hasten them, without paying more than a transient attention to the intermediate navigation of that place and Schenectady.

A desire of availing myself of the extensive information and local knowledge possessed by General Schuyler, of the internal navigation of this state, induced me to accompany that gentleman, to the utmost extent of the limits prescribed by the Legislature, as the boundaries of the Western Inland Lock Navigation. Though this examination was performed *first* in point of time, yet I shall defer making any observations at present, deeming it more eligible to lay before the board, a regular and connected account, from the *eastern* extremity, at Hudson's river, to the *western* termination at Lake Ontario.

The reason before-mentioned, having prevented a particular examination of the Mohawk, on my *ascending* it from Schenectady to the Little Falls; and the necessity that was perceived on my return from the westward, of personally inspecting and hastening the completion of the works, at the last mentioned place, unavoidably postponed my re-examination to such an advanced period,

as rendered it impracticable (from the height of the water) to form an accurate judgment of the necessary improvements; and consequently of the attendant expence, previous to a description of the present state of the navigation of the Mohawk; and the means of connecting it with the waters which disembogue to the westward, in lake Ontario. It will be proper to premise, that the *estimates* are formed with a reference to existing circumstances; an increase or diminution in the *value of labour* will therefore necessarily produce a proportionable variation in the amount. Keeping this in view, I trust the estimates will be found to approximate as near the truth, as the *uncertainty*, incident to works of this nature will admit. In such parts where the quantities can be ascertained by calculation, the allotted sums will be found as accurate as estimation will allow; but where, from particular circumstances, sufficient data cannot be obtained, much must depend on conjecture: Analogy on experience in similar situations, can alone enable us to form any tolerable idea of the *time* and *cost* of execution: always taking into consideration the *difference* occasioned by dissimilarity of place and circumstance. In every instance I have wished rather to *exceed* than to *fall short* in the aggregate amount: In some places *too much* may have been appropriated, and in others probably not sufficient; but the excess of one, by counter-balancing the deficiency of the other, will produce a *mean*, differing but little from the specified total; provided skill and economy are united in the execution; it being always to be understood that I proceed on the supposition, that the different works are all performed by contract. Having premised so much, I shall commence the survey at the *Cohoes*, proceeding westwardly.

The navigation of the Mohawk near its junction with the north river, is interrupted by a *large fall*, known by the name of *Cohoes*, which descends perpendicularly, upwards of seventy feet. This impediment has occasioned the navigation to terminate at Schenectady. The intercourse between that town and Albany, being carried on by waggons—the *amount* of the produce annually conveyed—the *badness* of the roads at particular seasons, and the *great expence* of land carriage, have long since rendered it an object of importance to connect these two places by a lock navigation. The most apparent route, and the easiest to be executed, is doubtless by following the Mohawk in its course eastward to the Cohoes, and then by a Canal from the level of the river above Lansing's mill, to form a communication with the Hudson. There are two routes, one of which on the *western shore* of the Mohawk, commences at Lansing's mill, and terminates opposite to *Troy*; the other on the *eastern side*, forms a junction with the Hudson, at Waterford. To enable the board to decide on the most eligible line, I have surveyed both the *plans* and *sections* herewith exhibited, each respectively, will explain the *situation* and *elevation*

of the ground, much better than can be conveyed by words; a comparative estimate is subjoined, shewing the difference of expence that will attend on the execution. That the board may form a just conception of the *merits* of the two lines, it will be proper to observe, that the first mentioned one, though nearly *two miles* longer, delivers the boats into *sloop navigation* at Troy: whereas the eastern Canal, by entering the Hudson at Waterford, obliges the boats to descend *that river* to the same point, before their cargoes can be shipped on board the trading vessels; unless this difficulty should be obviated, by an improvement in the north river, so as to render it navigable for vessels of burthen to Waterford. From what has been said, the board will be competent to decide which line will best promote, the interest of the stockholders *individually*, and the community at large.

The *estimates*, when the *distance* alone is taken into view, will appear very great; but when it is understood, that the lockage is upward of one hundred and forty feet, and that the quality of the ground, through which the Canal must be unavoidably ^{disrupted} connected, is chiefly a flaty rock, removeable in a great degree only by means of powder; when the price of that article—the high value of labour, and the little progress that can be made in such a material, are also considered, the amount will no longer appear surprising. Though the sum affixed is adequate to the removal of a cubic yard of rock, is much less than has been recently given for the excavation of a road at the east end of the Cohoes bridge; yet I have reason to believe, that by working to the best advantage, the cost will not exceed what I have allowed as competent to the performance. The consumption of powder will unavoidably be great; the exact quantity is not easily to be ascertained. I have calculated the expenditure in proportion to that consumed at the road before-mentioned. The price has been fixed at a medium between the present and usual value. On account of the depth of cutting, I have contracted the width of the Canal in various places, the slopes forming an angle of 45 degrees with the horizon. The towing path is also diminished six feet—the benches are as one to two, or three feet horizontal, to six feet perpendicular. The above dimensions admit the passage of one boat only at a time; but as the distance will not in any instance be great, no inconvenience will result from the measure; especially as meeting places may be formed in the valleys on the western line, without additional expence, and the cost of making them on the eastern line, will be an object of small importance. Some saving may be made in the execution, by dispensing with the towing path, and contracting the benches; but as these are intended for permanent works, I do not recommend the adoption of this measure. It is usual in Europe to tunnel or to form a subterraneous passage,

where the depth of cutting exceeds twenty-five or thirty feet.—Independent of the accidents these works are subject to (and which are by no means uncommon) the increased value of mechanical labour in this country, would render this mode nearly, if not quite as expensive as open cutting; which induced me to prefer the last mentioned method. The Canal in common cutting, is proposed to be twenty-six feet wide at the bottom, and thirty-five feet at the surface of the water (which is three feet in depth) the towing path elevated eighteen inches above it, and twelve feet in width: These dimensions are adapted to the size of the locks, as fixed by the Legislature, in the supplementary act of incorporation. The locks are proposed to be constructed in the best manner, with sound, hard burnt bricks; the hollow quoins, and coping, of stone—the chamber capable of receiving a boat seventy feet in length, and twelve feet in width.

At the time the above survey was performed, the water was so high in the Mohawk, as to render a regular examination from the Cohoes to Schenectady, useless; but from a cursory view of the river for six miles above Lansing's mill, and from the information obtained from persons acquainted with the remaining part, it appears that the navigation in general is tolerably good, excepting in three or four places, where short Canals and locks would be necessary; the worst rapid is at Vanderbegh's, six miles from Lansing's mill. The most effectual mode of improvement, will be to cut a short Canal from the upper to the lower end of the fall, on the north-eastern shore—the ground is flat, and apparently free from rocks; the length will not exceed five hundred yards, and one lock will suffice for the ascent of boats. A small, low dam from each bank to an island in the middle of the river, would save some digging, and afford an extension and increase of water in the pond above. From hence to Schenectady, there are two more rapids, where it would be necessary to pursue the same plan. From the upper fall to Schenectady, a distance of four miles, the navigation is good—from this place to Schoharry creek (upwards of twenty miles) there are a continued series of falls, of greater or less extent; the number and situation of these, are accurately detailed by General Schuyler, in his printed report, of 1792; to which I refer the board for further particulars. Judgment and caution must be exerted in the improvement of these rapids; as though inconvenient in themselves, they are beneficial in their consequences; rendering the intermediate navigation more perfect, by preventing a too quick discharge of water in a dry season, thereby making a partial navigation, when otherwise there would be none. An opening sufficient to permit a boat to pass through with facility; and a small low dam, or an oblique wing wall, to collect a greater quantity of water in the channel.

pond above, is the least expensive mode of execution. It is evident, that this increase of depth obtained by a contraction of the natural chanel of the river, will occasion a proportionate increase of velocity, and a consequent obstruction to the ascending boats: To remedy this inconvenience, it will be always prudent to have the opening near the shore, that the boats may avail themselves of the assistance of a towing path, to facilitate their ascent—when there is a sufficient depth of water above and below the rapid, and the bed of the river is not a solid rock, the remedy is very easily effected. These instances occur very frequently between the little falls and fort Schuyler, as will be more particularly mentioned hereafter. The state of the river to Schoharry creek, is such as to induce me to advise only a partial and temporary improvement, as I am persuaded that in a very few years, a natural and certain increase of trade will demand an attention, which its consequences will doubtless obtain, and that then a Canal on the southern bank of the river, to which purpose it is admirably adapted, from Schoharry to Schenectady, will be deemed absolutely necessary. The distance from Schoharry creek to the little falls, is thirty-six miles, and though there are several rapids, yet improvements will be neither difficult nor expensive. The particular manner of execution, can only be pointed out on the spot, after a minute inspection of each respective rapid.

Passing through the Canal at the little falls, the river continues navigable near five miles, to Orendorff's rift: But previous to a further description, it may be proper to point out what further steps are necessary to be pursued the ensuing year, to complete the works at the first mentioned places.—The great desire expressed by the board, to have the Canal opened this year, made it necessary to finish partially the different works, in order to effect the desired purpose. The embankments were therefore left in an unfinished state. From the settling incident to them, and equality of the soil, of which they are composed (and which was unavoidably used) it will be necessary early in the ensuing spring, to employ one or two boats to raise such parts as shall require it, and to continue strengthening the banks, until it has obtained a proper form. I have given Mr. Usher instructions to attend to this part of the work, at the commencement of the thaw, in the spring; and I have no doubt he will take every necessary precaution for its stability.

Recommencing the survey, we ascend in good water Orendorff's rift, a very strong rapid; the river being contracted into a narrow, deep channel; half a mile above this is the wolf rift, a wide and shallow rapid, continuing the same to fort Herkemer—the best manner of improving this part, will be to cut a Canal from fort Herkemer, to the deep water, below Orendorff's rift—the ground is very favorable, being free from rock, and with a regular and gentle descent—the length will be ninety-two chains; and the fall of the lock

at the east end ten feet, supposing the fall of the upper gate level with the surface of the water above the Wolf rift. To obtain the requisite depth of water in the Canal, I propose to throw a dam across the river, to raise it three feet—this will save that depth of extra digging, the whole length of the Canal, and will also improve the navigation of the two small rapids, above Aldridges. The dam, guard, and river locks may be built with stone, to be obtained on the south side of the Mohawk, at the little falls—the land carriage will not exceed one mile; and it may then be conveyed in boats to the destined spot—the quality is well adapted for these or any other works, where strength and duration are required—the stones rising in lamina, of different thickness—the beds perfectly parallel, and the dimensions as large as may be required: The expence attendant on this part, will be found detailed in the estimate, annexed hereto.—The distance from Aldridges, to fort Schuyler, is nearly fifty miles—the navigation, with few exceptions, exceeding good. The river from Posts upwards, is much impeded with trees, which render the passage both difficult and dangerous; in some places accumulated to such a degree, as almost to choak up the whole channel—the removal of these should be an object of the first attention; but the labour will be fruitless, if a supplementary clause to the act of incorporation, is not obtained; affixing such penalties as may effectually deter the commission of acts, producing these consequences. As the few rapids in the last mentioned district, have generally deep waters, above and below, and the bottom is either sand or gravel, they will be made navigable at a small expence. From the Mohawk, at fort Schuyler, to wood creek, there is a carrying place of one mile. In the spring there is generally a sufficiency of water to enable the batteaus to descend with their cargoes on board; but in summer season, it is necessary to convey the lading four miles further by land, to Canada creek; and then there is some difficulty to float the empty boat down, though aided by a flush of water, collected in the mill dam, during the preceding night. The ground between the two landing places, is remarkably favorable for the Canal; as the plan and profile herewith exhibited will clearly explain. The surface of the water in the Mohawk, at the upper landing, is sixteen inches higher than that of wood creek, where fort Newport formerly stood. But the navigation from Colbraith's upwards, is very bad, susceptible of improvement only by means of a dam. I have deemed it preferable to conduct the Canal about one hundred yards below White's landing, into good water. The length of the Canal will be one mile, five furlongs, and two chains; and the lift of the lock eight feet; that being the difference of the elevation between the two points above-mentioned. The soil through which the Canal is carried, being chiefly sand, with a small propor-

tion of gravel, and wholly free from rock, will make the expence of cutting comparatively small. The locks and abutments of the bridges, are proposed to be built with brick.—For the amount and particulars of expence, I refer to the subjoined estimate. It is to be observed, that I suppose the waters of wood creek, aided by those of a small rivulet, running at the foot of the rising ground, on which fort Schuyler stands (and which may easily be conducted into the summit level) will be adequate to the supply of a lock navigation. But should the increase of trade, at a future period, require further resources, they can be obtained by means of a dam thrown across the Mohawk, at the lower landing, so as to raise the waters therein level with those of the Canal, which may be effected at an expence not exceeding one thousand pounds, and without causing any alteration in the rest of the works. Wood creek, from fort Newport to its junction with Canada creek, is circuitous in its course, and the channel to fort Bull, in general, very narrow: the fall to this last mentioned place, is fourteen feet and a half, and the length near four miles—the fall from thence to Canada creek, is eighteen feet six inches, and the length three miles, one furlong, and six chains. The above fall I have divided into six locks; the ground not admitting of more than five or six feet lifts. This part of the creek at present, is tolerably free from trees; but unless the banks on each side are cleared twelve or fifteen yards in width, it will not long remain so—this is so necessary an operation, that it should be immediately carried into execution, from fort Newport to the Oneida lake. From Canada creek, to the royal blockhouse (a computed distance of twenty miles) the channel is much impeded by trees, which lying across the direction of the stream, collect banks of sand, which choak up the passage, and by directing the current obliquely against the banks, undermine them, and add fresh obstacles to those before accumulated.—The course of the creek is naturally circuitous—the improvements made by Mr. Richardson, have been very beneficial; but much yet remains to be done in the same way, which when effected, will considerably shorten the distance. This operation, and the removal of the trees and banks of sand, by promoting a quicker discharge of water, will produce a decrease in the depths thereof, making it necessary to construct locks and dams, which will then render the navigation of wood creek complete. The number and situation of these works, cannot be ascertained, until a regular survey has been made, which cannot be done conveniently, except in the winter season.

From the royal blockhouse, to the outlet of the Oneida lake, at fort Brewerton, is 24 miles, below which is Coquatany rift, about three hundred yards in length; the chief impediment is occasioned by an old Indian eel wear—a

wing wall to confine the channel into a narrow compass; removing the loose stones in the bed of the river, and making a towing path on the adjacent shore, will suffice to render this plan navigable. From the outlet of the Oneida lake to the junction of the Seneca, with the Onondago river, at three river point (18 miles) the navigation is perfect, with a current scarcely perceptible. Proceeding up the Seneca river, to the south end of the Cayuga lake, we have a navigation (with one or two exceptions, not worth mentioning) as complete as art or nature could render it.

Indeed the Seneca, instead of being deemed a river, may, with great propriety, be considered as an extension of the Cayuga lake; the channel being wide and deep, with an imperceptible current—in short, from the east end of the Oneida, to the south end of the Cayuga lake, a perfect navigation extending upwards, of one hundred and twenty miles, in a direct course, may be obtained at an expence, not exceeding two thousand pounds—as will be detailed in the annexed estimates—The Cayuga, at the north end, receives the Seneca river, distant from the lake of that name, sixteen miles—ascending that river three miles, we come to the falls, where there is a carrying place, three quarters of a mile in length. Whenever the western company require this obstacle to be removed, a Canal may be conducted on the north side, from the upper to the lower landing—the length will be six furlongs, five chains; and the fall, twenty-seven feet. Proceeding further up the river, we arrive at the little Scawyan—the current is rapid, but sufficiently deep—the removal of an eel wear, and the formation of a towing path, will make the ascent neither difficult nor tedious. From the little to the great Scawyan, the river is deep, and the current moderate. At this place a Canal is practicable on either side—the length will be six furlongs, nine inches; and the fall fifteen feet, ten inches—from hence the river continues good to the outlet of the lake. It may be proper to observe, that whenever these Canals are carried into execution, great part of the sums expended in their completion, may be reimbursed by the disposal of mill-seats, which are very scarce (and consequently valuable) in this part of the country.

Returning to three river point, we proceed down the Onondago river to Oswego falls (12 miles) in this district, are three rapids, two of which only are of consequence. At Oswego falls, is a short carrying place, but the boats are delivered into very rapid water, extremely difficult of ascent—a Canal may be carried through rocky ground on the south side—the length will be sixty-two chains, and fall eighteen feet—From hence to Oswego, where the Onondago river disembogues itself into Ontario, is a continued rapid for twelve miles. The adjacent shores being very steep and rocky, pre-

clude every idea of conducting a Canal along the bank ; as the only remedy, recourse must be had to dams and locks.—Averse as I am to this mode, yet necessity compels us (however reluctantly) to adopt it. The bed of the river being a solid rock, is a circumstance that will undoubtedly contribute much to the stability of the works ; and suitable timber abounding on the adjacent shores, will diminish the cost of erection.

The number of these dams, and the quantity of lockage, cannot be ascertained, until a regular survey has been made ; but previous to this, or the expenditure of any money, below three river point, it will be adviseable to examine, attentively, every other line of communication with lake Ontario, that has the least appearance of practicability. For this purpose, I shall suggest to the board, the propriety of exploring the intermediate country, between Rotterdam and Salmon creek.—From information obtained at Rotterdam, I understand that the distance from Oneida lake, to the navigable waters of Salmon Creek, does not exceed sixteen miles—that the ground is favorable, being free from rock, and that the sources of Salmon Creek, and the rivulet which enters the Oneida lake, at Rotterdam, rise near each other, and may in all probability, be conducted into the summit level.—If these conjectures should be verified by a regular survey ; and if the springs that can be obtained, are found adequate to the supply of a lock navigation, I shall certainly recommend this rout as most preferable, not only on account of its stability, but also for being near thirty miles shorter than the Onondago river. The expence of execution would probably be greater in the first instance ; but I am persuaded, would eventually be found cheaper from its permanency.—Arrived at lake Ontario, it is almost superfluous to remark (what is so obvious to every person, the least acquainted with the geography of the state) on the immense expanse of internal navigation, that opens upon our view—the extent of these lakes (with one obstruction only, that doubtless will be surmounted in a few years) presents to the mind—a scene unequalled in any other part of the globe ; offering to the enterprising and adventurous, sources of trade, rapidly advancing to an incalculable amount, ensuring a certain recompence to the individuals, who promote, and the state, that patronises their important undertakings.

William Weston.

A L B A N Y, DECEMBER 23, 1795.



GENERAL VIEW

Of the expence of improving the internal navigation, from the tide water of Hudson river, to the Cayuga lake, by means of Canals, locks, and removing the obstructions in the rivers, so as to render them competent for the transportation of produce in boats of twenty tons, and upwards—drawn from the estimates, made in detail, by William Weston, Esq. Engineer, after actual survey.

To connect the waters of the Mohawk river, with the Hudson, by a Canal, and locks from above the Cohoes falls. An option of the two following routs is offered; to wit:

FROM Lansing's mills, above the said falls, by a Canal of 4 miles and 54 chains in length, on the *west* side of the Mohawk river, to the sloop navigation, opposite to the town of Troy.—Six miles north of the city of Albany.—

Estimated expence,

£.	s	d
102,268	4	6

Or,

From the said mills, by a rout on the *east* side of the Mohawk river, to enter Hudson river, at Waterford, 4 miles above Troy—a distance of two miles, and fifty-one chains.

Estimated expence,

105,240	13	7
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For the Canals, locks, towing paths, and other requisite improvements, in the Mohawk river, from Lansing's mill, to the town of Schenectady—distance, about 12 miles.—

Estimated expence,

15,247	0	0
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For like improvements, from Schenectady to the mouth of Schohary creek—distance, 20 miles.—Estimated expence,

15,000	0	0
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For ditto—from Schohary creek, to the foot of the falls, in the Mohawk river, in Herkemer county—distance, 36 miles.—Estimated expence, £. s. d.

4,924 0 0

The works at the falls are completed, and boats pass the Canal and locks.

For like improvements, from the head of the said falls, to the portage, at fort Schuyler, between the Mohawk river, and wood creek—distance, 56 miles.—Estimated expence, 8,914 15 6

For a Canal, locks, and towing path, across the said portage—distance, 1 mile, and 52 chains.—Estimated expence, 12,266 8 3

From the west end of the said Canal, for like improvements, down wood creek, to render it a complete Canal navigation, to its junction, with the Oneida lake—distance, 30 miles.—Estimated expence, 28,787 0 0

From the east end of the Oneida lake, to the out-let of the Cayuga lake, little is to be done—the distance is 101 miles, and the estimated expence is, 2,090 0 0

From the said out-let, to the western extreme of Cayuga lake, is about 40 miles; hence the total distance, if taken from Hudson river, at Troy, is 302 miles, and the aggregate of the estimate for the whole, is, 189,497 8 3

Or, if taken from Waterford, the distance is 299 miles, and the aggregate of the estimate is, 192,769 17 4

The produce of the western country, conveyed by water carriage, is landed at Schenectady; from whence to Albany, there is a land carriage of 17 miles. Hence, if the Canals and locks between Schenectady and the Hudson river, are not constructed, the estimated expence for all the requisite improvements, from that town to the western extreme of the Cayuga lake, will be only 72,982 3 9. And the distance about 285 miles.

To every of the estimates, ten per cent. has been added for contingencies.

F I N I S.



